

**REMARKS**

This application has been reviewed in light of the Office Action mailed on August 7, 2006. Claims 1-65 are pending. Claims 1-5, 9, 13, 17, 21, 29-33 and 57 are rejected. Claims 6-8, 10-12, 14-16, 18-20, 22-28, 34-56 and 58-65 are objected to. No amendments are provided with this response. Reconsideration of this application in light of the remarks which follow is respectfully requested.

Claim Rejection - 35 U.S.C. §102

Claim 1 stands rejected under 35 USC §102(b) as being allegedly anticipated by Wilkinson et al. Patent Publication No. US 2003/0005722 A1. The Examiner contends that the Wilkinson et al. '722 reference shows in Figure 15 a process which separates the cooled feed into a first stream 33 and a second stream 32 whereby both streams are fed into a distillation column. The Examiner also asserts that stream 42 is removed from the column below the feed point of the second stream, cooled and partially condensed, with the liquid being supplied back to the top of the reflux column.

Applicants' Claimed Invention Differs from the Process Disclosed By Wilkinson et al. In U.S. Patent Application No. 2003/0005,722 A1

Claim 1 of the instant application provides that, following cooling, the cooled gas stream is divided into first and second streams. The Examiner asserts that high pressure separator 11 in Wilkinson et al. splits the feed. That is incorrect. The compositions of vapor stream 32 and liquid stream 33 in FIG. 15 in Wilkinson et al. clearly differ, as shown in the tables on pages 4, 6, 8 and 9 of Wilkinson et al. In contrast, the compositions of streams 34 and 36 in FIG. 1 in the instant application are the same (Table I on page 13 shows that they have identical percentages of the hydrocarbon constituents) because the feed (stream 32) has indeed been split, rather than separated into vapor and liquid streams as taught by Wilkinson et al.

The Examiner's rejection equates stream 33 of Wilkinson et al. with the "first stream" (e.g. stream 34 in FIG. 1) of the instant application. Likewise, the Examiner's rejection equates stream 32 of Wilkinson et al. with the "second stream" (e.g. stream 36 in FIG. 1) of the instant application. Element (3) of claim 1 in the instant application provides that, after division, the first stream is cooled to condense substantially all of it and is thereafter expanded to an intermediate pressure. Stream 33, the alleged first stream in Wilkinson et al., is not cooled following the asserted division (11) and prior to expansion.

Interpreting Wilkinson et al. in accordance with the rejection, the positions of the feed streams are reversed when FIG. 15 in Wilkinson et al. is compared to FIG. 1 in the instant application. In Wilkinson et al., the alleged first stream (stream 33) is supplied to the distillation column at a feed location *below* that of the expanded second feed (stream 32). In FIG. 1 of the instant application, the expanded substantially condensed stream (stream 34) is supplied to the distillation column at a feed location *above* that of the expanded second feed (stream 36). Further, as noted above, element (3) of claim 1 in the instant application is completely missing in Wilkinson et al. because stream 33 is not cooled after the alleged division. This claim element is illustrated by heat exchanger 13 in FIG. 1 of the instant application, but is completely absent from FIG. 15 of Wilkinson et al. where stream 33 is expanded and then heated in exchanger 10.

FIG. 1 and embodiments illustrated in some other figures in Wilkinson et al. do show division of the cooled natural gas stream. However, none of the embodiments illustrated in Wilkinson et al. include the withdrawal of a vapor distillation stream from a region of the distillation column below the expanded second feed. Accordingly, Wilkinson et al. does not anticipate the claims of this application.

Element (6) in claim 1 of the instant application provides that a vapor distillation stream is withdrawn from a region of the distillation column below the expanded second stream which is supplied to the distillation column at a second mid-column feed position relative to the

expanded cooled first stream. This is illustrated in FIG. 1 of the instant application which shows stream 42 withdrawn from the distillation column *below* the expanded second stream 36a. In contrast, stream 42 in FIG. 16 in Wilkinson et al. is withdrawn from the distillation column *above* what the Examiner regards as expanded first stream 33b.

Because of the relatively high concentration of C₂ components in the vapors *lower in the tower*, a significant quantity of liquid can be condensed in side draw stream 42 in the instant invention. This condensed liquid, which is predominately liquid methane and ethane, can then be used to absorb C₃ components, C₄ components and heavier hydrocarbon components from the vapors rising through the upper rectification section and thereby capture these valuable components in the bottom liquid product from the demethanizer.

Clearly, Wilkinson et al., which discloses a side draw stream *higher in the tower*, does not include the features of the invention recited by Applicants in claim 1 of the instant application.

Claim Rejection - 35 U.S.C. § 103

Claims 2-5, 9, 13, 17, 21, 29-33 and 57 stand rejected under 35 USC §103(a) as being allegedly unpatentable over the Wilkinson et al. in view of Campbell et al. U.S. Patent No. 6,182,469. The Examiner contends that Wilkinson et al. discloses the basic inventive concept “with the exception of splitting the feed into a liquid and two vapor flows and combining some of the liquid with one of the vapor flows.” The Examiner asserts that the Campbell et al. ‘469 patent teaches the combination of a portion of the liquid with one of the vapor streams and that it would have been obvious to one of skill in the art to combine the teachings of Campbell et al. and Wilkinson et al. to arrive at the claimed invention.

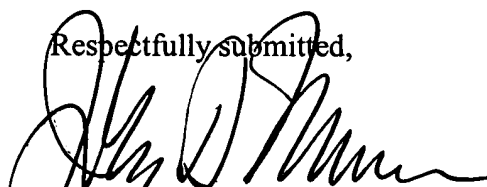
The Claimed Invention Is Not Obvious In View Of The Prior Art

The Campbell et al. '469 patent relates to hydrocarbon gas processing, not natural gas liquefaction. Although FIG. 1 and other illustrated embodiments in Wilkinson et al. disclose separation of a partially condensed natural gas stream to provide a vapor stream and a liquid stream, dividing the vapor stream into at least first and second streams and combining the first stream with at least a portion of the liquid stream, none of those illustrated embodiments suggest that a vapor distillation stream be withdrawn from a region of the distillation column below the expanded second stream feed as required by the instant claims. Accordingly, none of the claims are suggested by and obvious in view of Wilkinson et al. or the '469 Campbell et al. patent, either alone or in combination.

Conclusion

In view of the foregoing distinctions, the Applicants submit that the present invention is not recited or suggested by Wilkinson et al. and/or the '469 Campbell et al. patent. Accordingly, favorable reconsideration of the application is earnestly solicited.

Respectfully submitted,



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